

REACTION KINETICS OF RESVERATROL WITH THIYL AND ALKOXYL RADICALS

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Plant derived resveratrol (*trans*-3,5,4'-trihydroxystilbene) possesses a broad spectrum of biological activities, one of them are very well known its antioxidative properties [1]. Our work aims to provide kinetic data with regard to the reactivity of resveratrol with uninvestigated short-lived bioradicals, identified as mediators in oxidative lipid degradation processes. Radicals of our interest are alkoxy radicals, well known propagators of the chain free radical reactions in lipids, and thiyl radicals which protect lipids from their degradation pathway, but at the same time cause the isomerization of the double bonds. In order to investigate these reactions of resveratrol laser flash photolysis was used. On the basis of competitive kinetics the rate constants were determined under pseudo-first order conditions in acetonitrile solutions at room temperature. Thiyl radicals were generated indirectly in solution containing 1-octadecanethiol and photosensitive benzophenone in acetonitrile using the light pulses at 347 nm from ruby laser. *Tert*-butoxyl radicals were generated directly by peroxide bond cleavage from di-*tert*-butyl peroxide in acetonitrile by light pulses of Nd:YAG at 355 nm [2], and ruby at 347 nm [3]. Obtained rate constants for the reactions of resveratrol and radicals generated by laser flash photolysis will be summarized and compared with rare literature data for the rate constants of investigated reactions of resveratrol and other radicals generated by pulse radiolysis.

References

- [1] Y. Shang, Y. Qian, X. Liu, F. Dai, X. Shang, W. Jia, Q. Liu, J. Fang, B. Zhou, *J. Org. Chem.* **74** 5025 (2009)
- [2] S. Petralia, C. Spatafora, C. Tringali, M.C. Foti, S. Sortino, *New J. Chem.* **28** 1484 (2004)
- [3] B. Mihaljević, D. Ražem, *Rad. Chem Phys.* **67** 269 (2003)